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Formal Gardening.

THE little book entitled *The Formal Garden in England*, which was reviewed a few weeks ago in this journal, is very interesting in its descriptions of some old English places, and it is not seriously injured because in the warmth of their enthusiasm the young authors are moved to commend some samples of alleged garden-art which would be ridiculous if they were not dignified and almost hallowed by historical associations. It is plain that the authors have no clear idea of what the masters of that art mean when they speak of the "natural style of gardening," and yet the book appears to exist not so much to commend the formal gardens of Old England as to condemn another kind of gardening, to which the authors refer under the name of landscape-gardening. We call attention to this, however, not to take sides in any controversy, but simply to repeat what has often been said in this journal, that there is no reason why one kind of gardening only should be used; indeed, there is every reason why different styles should be employed for different purposes in different places. More than this, the fact that one has an intelligent appreciation of true landscape-art does not argue any inability to enjoy the best examples of formal gardening. Indeed, it is probable that one with the catholic sympathies and free imagination which enable him to take pleasure in beautiful gardens of every kind has a more genuine and consistent delight in formal gardens than the professed champions of this style exclusively.

The first essential of a formal garden is, of course, its formality, or perhaps we should say its mathematical symmetry both in surface and outline. In connection with this we are accustomed to see conspicuous brightness of color, but the very best examples of formal garden art may exist without brilliant colors, and, indeed, formal flower-beds where carpet patterns are reproduced in emphatic colors are so often used in places where rigidity of outline and vividness of color are conspicuously out of place that they have done very much to prejudice persons against the very name of formal gardening. It has been said that the garden is an essential part of the dwelling, and that therefore it must have the same kind of balance, regularity and finish, or, in other words, that the immediate surroundings of the house must have architectural treatment, and the methods which have governed the design of the house should be carried out to the surrounding grounds. It is not true that this is the only way to make a consistent house-scene that is to bring the house into perfect harmony with the grounds, but it is one way, and a very good one in many cases, to produce a homogeneous result. In more spacious areas, like public parks, there are places where, in connection with terraces, promenades and similar constructions, the planning and the planting can have this same formal and architectural character with the very best effect.

It must be remembered, however, that quite as much skill of one kind is demanded to make this formal treatment effective as there is of another kind of taste and training to produce a good landscape-picture. It is true that many efforts to create or improve scenery in this country and in Europe are dismal failures; it is equally true that examples of the best formal planting are even more rare than those of the most effective natural planting. When it is decided that formal treatment is the best for any particular place we are at once brought to face the real problem in the situation. Creative faculty is needed here as truly as it is in any of the other arts of design, and where shall we look for the artist who has been trained for such work? Very plainly the men who are skilled at laying ribbon-lines and constructing portraits of eminent citizens out of Echeverias are not to be trusted. Ornamentation of this latter kind is too crude to be classed as art. And yet the student will find little that is better than puerilities of this sort. We stand in need of both precept and example, and it is to be hoped that the next work on formal gardens will attempt to lay down some of the canons which should control their design and construction.

For success in the best architectural gardening no man can have a sense of color too refined or too clear an idea of the beauty of form and proportion, and yet it should be remembered that, at its best, garden-art of this kind appeals to the sense of beauty alone, and while it may give the keenest pleasure we should remember that there is a higher art which addresses itself to the nobler part of man's nature. A natural landscape or a genuine work of landscape-art possesses something more than beauty, something beyond perfection of form and color. Its essential charm is in the inner meaning to which it gives expression so as to move the feelings and touch the heart.

The Love of Nature.—II.

ONE frequently hears persons who are planning for their summer in the country declare that this year they want to "go somewhere else and see something new," not because they have any special fault to find with their former place of residence, but because they are tired of the especial phase of natural beauty which it offers them. The mountains one year and the sea the next, or at least a change from one mountain or sea-side place to another, is the rule of summer life with many people. They would be surprised to be told that it is the rule because they care little for nature. If they really loved nature in the full sense of the term, they could exercise their admiration within very narrow limits, and find in the same scenes perpetual stimulants to æsthetic curiosity. And they would be likely to content themselves within such limits because a special love for individual local beauties would result from long acquaintance with them.

In Mrs. Robbins' *Rescue of an Old Place* she rightly says that one great benefit which springs from the possession of

a few acres of ground is the development of a love for home, the suppression of that restless desire for change which makes so many Americans "possible tramps" instead of established citizens. But a genuine love of nature will serve a person pretty well in place of the actual ownership of a portion of the earth's surface. For in whatever corner of the country he may chance to be he will see, understand and love every part and phase of its beauty, and thus, in a sense, feel himself the owner of the whole region; and the oftener he visits it the stronger and more intimate will become his feeling of attachment to it. Of course, he will not be without a natural desire to see as much of the earth as possible, and to learn how many kinds of beauty it can show. But this desire will not be the imperious need for "a change" which is felt by less fortunately endowed persons, and often it will be so much weaker than his desire to stay among the things which he knows best, and therefore loves best, that year after year will pass, and foreign lands, or even neighboring regions, will tempt in vain while he watches new clouds blow over his familiar hills, the flowers spring up in his familiar woods, and every long-familiar shrub and tree assume a new aspect with each season's growth and changes.

This is the true secret of every kind of love; if a thing appeals to us at all, the better we know it the more we care for it. The true lover of nature loves it as the true lover of humanity loves men. He has his favorite corners of the world as he has his friends, and does not constantly wish to change them for others, or perpetually contrast their attractions with the attractions of others. If every one admires them his joy in them is increased; but if he is almost alone in appreciating their charm, this fact is in itself the source of a special kind of pleasure and pride. He seeks for novelty and freshness in the things which surround him as he likes his friends not to be all day and every day the same. He travels to new scenes in the same way that he likes to make acquaintance with interesting strangers, but comes back as gladly to the familiar spot as to the familiar face. The tree which he has watched as it grew from a sapling to a fine specimen delights him more than an even finer specimen about which no memories or anticipations cluster; and even if he has not planted and watered it himself, even if it grows in the neighboring forest instead of his own field, he has for it, nevertheless, a genuine personal affection. If he drives through a beautiful new country his eyes are perpetually charmed; but when he drives through the roads around his home his heart is touched and his imagination stirred by the beauty of past years as well as the beauty of to-day, and by the feeling that everything he sees is linked in some way with his personal experience. Each tree is a friend, each shrub has a special voice for his special ear, each flower is greeted as the child of other flowers which he knew last summer in the same corner of the road-side. In short, he not only admires what he sees; he is interested by everything he sees in a sense that is impossible where things are beheld for the first time. And true love, if it means admiration, means interest also, whether inanimate things or human beings are in question.

One who is truly interested in nature, therefore, does not need fine views in the usual acceptation of the term—great ranges of mountains, picturesque stretches of rocky coast, or outlooks over wide panoramas of hill and valley and river. Every view not seriously marred by some incongruous work of man has some charm for his eye. And he recognizes, moreover, that a very fine view must often be purchased at the expense of other attractions. If, for instance, there are mountains around him, he cannot have that far, low horizon-line which, stretching its mighty curve at a seemingly immeasurable distance, gives an unequaled sense of space, freedom and infinity. "I have never seen the sky before," a painter once exclaimed who had passed his life in hilly regions, and now, for the first time, stood in the low, quiet Cape Cod country; "I did not know it was so big or so near or so arching, or that there were so many stars, or that a sight of them all could be so magnificent. I never before saw the moon come up from below the earth instead of merely from behind the hills, and I never saw the whole of a sunset until I came here." And he seemed to think that the panorama of the morning and evening and midnight skies was as admirable as any terrestrial panorama which could be unrolled before him.

Again, in our crude and often maltreated land, grandeur in the distance often means raggedness and forlornness in the foregrounds, and a sensitive eye thinks the foreground of a picture as important as its background. Where forests have ruthlessly been cut away, and where there is not a rich soil to encourage neat and careful cultivation, primeval beauty has largely vanished and the beauty of civilization has not replaced it. The true lover of nature will feel this painfully, and all the magnificence of the mountains beyond may not compensate him for the lack of that harmony and repose in general effect which come when all parts of a picture are in keeping. We do not say that the true lover of nature cares nothing for grand scenery, only that he does not actually need it. Great things impress him, but small ones enchant him, and he gathers pleasure from the road-side grass as well as from the giant Oak or the sky-line of a rugged mountain range. There is a beauty of the Lily and a beauty of the Pine, a beauty of the mountain and a beauty of the plain, a beauty of wide outlooks and a beauty of enclosed and sequestered corners. One kind of necessity excludes another kind; but that does not matter to him, for all arrest his eye, interest his mind, and make appeal to his imagination and his heart.

Notes of a Summer Journey in Europe.—XIV.

PROBABLY no city in the world can equal Paris in the beauty of its little parks and promenades, and more particularly for the wealth of flowers which is displayed throughout the summer in the flower-beds in these public places. But the exhibition of gayly colored exotics is sometimes introduced where a bit of pure nature would be a pleasant change. While such a fine show may seem appropriate enough in the Tuileries gardens, its effect is not altogether pleasing in such a place as the beautiful little Parc Monceau, where the formal flower-beds of glaring colors seem out of place among naturally grouped trees and shrubs.

But in spite of these inharmonious features the Parc Monceau seemed to me a charming model of a little city park. The situation is most favorable, and the trees and shrubs have for the most part been grouped with such good judgment and with such pleasant effect that, unlike most town parks of a few acres, one thinks of this as a country place, and not a garden in the heart of a city.

On the other hand, the famous Jardin des Plantes is likely to prove somewhat of a disappointment to most visitors. It may be that too much is expected, but the fame of the illustrious names which have been connected with this institution for nearly three centuries and the high order of scientific work which has been accomplished very naturally kindles the expectation of finding a botanic garden of the very highest order in every respect. Unlike some other botanical gardens, the Jardin des Plantes does not claim to be a popular institution, but prides itself on its scientific value. Therefore, in the purely scientific and systematic collections of living plants, no attempt is made to produce anything ornate. The greenhouses are not often freely open to the public, and there are some interesting collections not easy of access without special permits. If we find the garden inferior in some respects to what might be expected of it, from its age and fame and as the representative botanical institution of a great nation, it should be remembered that its situation and soil are not of the best, it has never been properly endowed by the Government, and, from all accounts, it suffered severely from the shells of the besiegers in the last great war.

The collection of living plants is undoubtedly one of the largest and most valuable in the world, but in many cases the specimens are not in a very thrifty condition. This, however, does not apply to the public floricultural display, which apparently receives much attention. Within the principal enclo-

sures, known as the "School of Botany," almost everything is planted in narrow parallel rows, which arrangement, although not so agreeable to the eye as a less formal and more scattered grouping, has the advantage of permitting perfect botanical sequence, so that one need not constantly refer to a plan in order to find particular groups of plants. In no large collection in a limited space can a classification in strict botanical sequence be perfectly satisfactory, because the trees will crowd and take from the soil what the neighboring smaller plants should have, and it is hardly possible to give each group the most congenial conditions of soil and exposure. The system of labeling is very complete here, the labels being of iron, neatly made, and the inscriptions in good distinct type. Indeed, there are more and better labels in proportion to the plants than in any scientific collection I ever saw. But, although the labels are so numerous and in such good condition, their inscriptions are not always to be relied upon as giving the correct name of the plant, and there is serious inaccuracy in the determination of species, certainly among some species from North America. To cite examples from our common eastern American Oaks: Quercus alba, Q. macrocarpa and Q. nigra are all represented as our Swamp White Oak, Quercus bicolor; a Red Oak has the Scarlet Oak label before it; Quercus alba, Q. Prinus, Q. prinoides, Q. coccinea and other common American Oaks are not represented. Betula nigra is labeled Betula lutea, and the Canoe Birch (B. papyrifera) is passing as our Sweet or Cherry Birch (B. leuta). A long list might be made of instances like these, which shows that if the specimens are to have their intended educational value closer attention should be given to their names. Such mistakes are, no doubt, often caused by the stupidity of workmen, but when an establishment of such renown allows errors like these to pass unnoticed it is hard to blame nurserymen or commercial dealers for disseminating plants under wrong names. They might easily, and with some justification, give as an excuse that the plants were so named in the School of Botany of the Jardin des Plantes at Paris. A use of synonyms is perhaps more excusable, and we find this and other European gardens giving us credit for more species of such plants as Poplars, Ashes, Buckeyes, etc., than our botanists claim.

The garden contains many great rarities, and those persons who wish to see the most precious specimens and the very latest arrivals should seek admission to the very private little "pepinière," or nursery, which is crowded with interesting plants.

The visitor comes across old trees or trees of historic interest in various parts of the grounds of the establishment. The oldest tree of Paulownia in Europe is here, having been introduced in 1834, and now having a trunk six feet in circumference. The species has been planted in some of the squares, where it is kept cut back to a low broad shape, affording a dense shade, and apparently bearing pruning and the city atmosphere remarkably well. In a corner near the museum buildings is the aged specimen of our common Locust (Robinia Pseudacacia), which, the affixed label tells us, was introduced into France by Jean Robin in 1601, and that this tree was planted where it now stands by Vespasian Robin in 1636 (see GARDEN AND FOREST, vol. iii., p. 311). The trunk is now so much decayed that the tree can hardly live much longer. It has been patched up with plaster or cement, and the limbs are held together by iron rods. The Cedar of Lebanon planted by Bernhard de Jussieu in 1735 is apparently in as good health now as it could have been at that time, and it has a trunk about four feet in diameter. It is planted on a dry bank, just such a situation as should be selected for it in cold regions, so that its growth is not too rank. It seems surprising that attempts to grow and naturalize this tree in America are not more frequently made. Another plant of much interest is a specimen, now thirty years old and partly decayed, of the Prunus Davidiana, introduced from China by the celebrated traveler and collector after whom it was named. This plant has never fruited, a characteristic which has so far been followed by its grafted progeny at the Arnold Arboretum, where it is the very earliest of the Rose family to blossom, flowering this season as early as April 8th. The flowers seem perfect enough as regards stamens and pistils, and the non-fruiting peculiarity has been attributed to frost or cool weather at the time of blossoming, or, what may be quite as probable, to the lack of pollen from flowers of different seedling plants of its own kind. It is a question worth testing carefully. A little-known shrub or small tree of the Witch Hazel family is Parrotia Persica. A specimen of this here has several thick stems from the same base, is twenty feet high, and has a spread of thirty feet in diameter. It has proved quite hardy in the vicinity of Boston, but as its flowers are not remarkable for any peculiar beauty, and it is chiefly valuable for the colors of its autumnal foliage, it is perhaps no more desirable from an ornamental point of view than some of our native Cornels and Viburnums. The flowers appear as reddish clusters of stamens in spring before the leaves.

The garden has been the medium through which many of the recently introduced Asiatic plants have been distributed, and it annually issues a long list of seeds of plants it has for exchange. While in some respects there are features about the garden which prove a disappointment, the herbarium and museum connected with it contain mines of wealth for the student in botany, and every one acquainted with the labors of Franchet and other students connected with it to-day recognizes the value of the scientific work still carried on within these unpretentious walls.

Arnold Arboretum. *J. G. Jack.*

Internal Decay of Forest-trees.

MY observations upon this subject, given in a recent issue of GARDEN AND FOREST, have brought me a large number of letters from many states, showing that the evil is a widespread one and difficult to account for. My own limited experience led me to infer that it might be due in some degree, if not wholly, to the situation of my woodland in a deep and narrow valley. I am not quite convinced that this is not the fact; but it seems evident from what I have gathered that this central decay of the trunks of forest-trees is not limited to such situations. Quite fortunately, in looking up another subject a few days since, I came upon the following, under the head of "Larch," in the Allen edition of the *Encyclopædia Britannica*. Here it is stated that the woolly aphis, or "Larch-blight," often attacks the trees in close valleys, but rarely spreads much unless other unhealthy conditions are present. But "a far more formidable enemy is the disease known as the 'heart-rot'; it occurs in all the more advanced stages of growth, occasionally attacking young Larches only ten years old or less, but is more common at a later period, when the trees have acquired a considerable size, sometimes spreading in a short time through a whole plantation. The trees for a considerable period show little sign of unhealthiness, but eventually the lower part of the stem near the root begins to swell somewhat, and the whole tree gradually goes off as the disease advances. When cut down the trunk is found to be decayed at the centre, the rot usually commencing at the ground and gradually extending upward. Trees of good size are thus rendered nearly worthless, often showing little sign of unhealthiness until felled." The writer of this article in the *Encyclopædia* adds that the manner in which this disease spreads indicates a fungal origin, and that some fungus mycelium may be the remote cause of the disease; but that "there is little doubt that any circumstance that tends to weaken the tree acts as a predisposing cause of the attack," and he thinks the best safeguards are probably perfect drainage and sufficient thinning. The writer of this article of the *Encyclopædia* is C. Pierpoint Johnson, editor of *Sowerby's Wild Flowers*.

But the most interesting letter which has come to me in this connection is from a well-known gentleman in New Hampshire, connected with the agricultural press. From this letter I make the following extracts: "I have often noticed in the woods in Maine, and in other places where I have had opportunity, this tendency to decay at the heart, although I never heard it discussed. It would seem possible that the location between wet and dry soils was the cause of the trouble. We know that the strip of land at the foot of a long slope, just before we come to a muck-swamp or a stream, is the hardest to convert into tillage land. A few inches of loose black scurf on a hard pan of white or rusty sand, when cleared it produces moss and running Blackberry-vines until Firs and Hackmetacks again come to the rescue. On my farm we cleared up a large meadow along a brook, and another in a dense swamp where the drainage was very slow, and the trees were so tall that we had to cut back some distance to get the shade off the grass land. On this border the trees were rotten at the heart. The White Maples and Black Ash and Elms and the other trees which were at home and sound on dry land, seemed to be affected on this strip. One Elm, about fifteen inches in diameter, had a shell about two inches thick; I sawed it off in sections and nailed on board-bottoms for feed-boxes. An Ash, with a shell about one inch thick, I split and made into troughs for feeding sheep. A Yellow Birch, with about three inches of shell, I made into a farm-roller." This writer thinks the interior rottenness in all these trees was probably due to the death of the tap-roots, from the unfavorable

nature of the soil, and the extension of the decay upward through the trunks of the trees.

Referring to the perfect soundness of the Arbor-vitæ trees of north-eastern Maine, previously alluded to by me, an item caught my eye in a recent copy of a Houlton (Maine) newspaper, as follows: "One of Aroostook's giant Cedars was cut by Geo. Humphrey's men at Thomas Taylor & Son's camp, on Cary Brook, last week. This Cedar was four feet on the stump, sixty-two feet long and ten inches in diameter at the top end—making 1,491 feet of inch-lumber."

Newport, Vt. *T. H. Hoskins.*

Coontie and Conte.

THE article in Garden and Forest, of February 3d, 1892, on Smilax Pseudo-China, recalls an interesting bit of history connected with the botany of the south, which also brings forcibly to mind the difficulties in identifying a plant known only by a common name. I refer to the Coontie of the Florida Indians, the aboriginal name of Zamia integrifolia, the plant from which Florida Arrowroot is obtained. At first S. Pseudo-China, or some other species of Smilax, was supposed to be the Coontie, or Coontia, of the Indians. Dr. William Baldwin, one of the early investigators of the botany of Georgia and Florida, held this opinion. From 1812 to 1817 he was in this region collecting plants, and he seems to have been the first to identify Coontia with Zamia. Dr. Henry Muehlenberg, his constant correspondent, shared these doubts about the Coontia, or Bread-plant, of the Seminoles. This correspondence was published by Dr. William Darlington, in *Reliquiæ Baldwinianæ*, and in a letter dated June 18th, 1812, Muehlenberg asks Dr. Baldwin, "What is the real Coontie of the Indians? Is it Smilax laurifolia, or do you find it figured in Catesby or elsewhere?" Baldwin replies: "The root which furnishes the Coontia of the Creeks is certainly Smilax."

Five years later, after Dr. Muehlenberg's death, he found the real Coontia south of St. Augustine, and in 1817 he writes to Darlington: "Here, in a thin sandy hammock of small Live Oaks, Cabbage and San Palmettoes, I had the gratification to find the 'Wild Sago,' or Coontia, of the Seminoles, and to assign it its place in the sexual system—Dioicia, Polyandria, natural order Palmæ. I have no books with me to refer to, but it is probably a new genus, approaching very closely in habit to the real Sago family (Cycas). At supper I had the pleasure to eat the bread prepared from the large tuberous root of this plant. . . . I have no hesitation in saying that it will be found among the most important of our Esculentia." A few days later he writes: "I now find that my Coontia, or Wild Sago, is nothing more nor less than Zamia pumila"—that is, Z. integrifolia, Willd. Dr. Baldwin therefore traced the Coontia of the Seminoles, whatever may have been that of the Creeks, to Z. integrifolia.

Referring to Bartram's Travels (English edition, page 160), and the only place where much is said of it, there is no allusion to its use as food, but to its beauty alone. As Bartram was particular in his observations, this seems strange, and may indicate that he was unacquainted with such a use of Zamia. Subsequently he went to an Indian village, perhaps not far from Appalachee Bay, and in middle Florida. Here he was entertained by the Indians, and partook of a dish which he calls conte (contee in the table of contents), and of which he writes (ibid., 239) quite minutely: "Early in the morning our chief invited me with him to take a final leave of the White King. We were graciously received and treated with the utmost civility and hospitality; there was a noble entertainment and repast provided against our arrival, consisting of bear's ribs, venison, varieties of fish, roasted turkeys, hot corn-cakes, and a very agreeable cooling sort of jelly, which they call conte; this is prepared from the root of the China-brier (Smilax pseudo-China; S. aspera, fructu nigro, radice nodosa, magna, lævi, farinacea; Sloan, *Nat. Hist. Am.*, i., p. 231, t. 143, f. 1; habitat Jamaica, Virginia, Carolina and Florida). They chop the roots in pieces, which are afterward well pounded in a wooden mortar, then being mixed with clean water in a tray or trough, they strain it through baskets; the sediment, which settles to the bottom of the second vessel, is afterward dried in the open air, and is then a very fine reddish flour or meal; a small quantity of this mixed with warm water and sweetened with honey, when cool becomes a beautiful, delicious jelly, very nourishing and wholesome. They also mix it with fine corn-flour, which being fried in fresh bear's-oil makes very good hot cakes or fritters."

A question of interest is suggested by this quotation, whether this agreeable food, conte, of these Indians (called Lower Creeks as well as Seminoles by Bartram) is the same as the coontia of the Creeks and Seminoles mentioned in the letters of Muehlenberg and Baldwin. There is a similarity in the names, which may be a matter of etymology—of words coming from the same root and indicating a food-product of analagous use. But this does not necessarily make them identical. Though not, perhaps, too far north for the growth of Zamia (if the conte was derived from a local plant), since Bartram on the third day of his return from this village to the St. John's speaks of gathering seeds of Zamia, it would hardly seem that one mentioning Smilax so definitely as the source of conte would confound it with another plant. Then he must have been well acquainted with S. Pseudo-China, which he mentions elsewhere, and which was a common plant from New Jersey to the Gulf of Mexico, a region through which he passed more than once.

Is there, then, in the large tuberous roots of this Smilax a food worthy of the attention of those in quest of new native sources of food-supply? How valuable might it be if used as an esculent, and improved by cultivation like most of the vegetables which come to our tables. Animals are well aware of its edible properties, for pigs root up the ground for the tubers, a fact also noticed by Pursh in his Flora. Its useful qualities were also known to other botanists. Elliott, in his *Sketch of the Botany of South Carolina and Georgia*, does not mention it as an esculent, but says of it: "This species forms the basis of many 'diet drinks' among the 'unlicensed faculty.' From the roots, with Indian corn, sassafras and molasses, the negroes manufacture a very pleasant beer." Rafinesque is more explicit. In his *Medical* Flora he says of Smilax: "All more or less equivalent. S. Sarsaparilla, best known; S. Pseudo-China, largest roots, extend one hundred feet in damp soils, forming clusters. Much used by the southern Indians for food, mush, and the fecula is a red-brown flour. Good beer made with sassafras and molasses purifies the blood. Shoots eaten like asparagus. S. caduca, laurifolia, tamnoides, etc., equally used." Having mentioned their medical properties, he concludes: "Properties reside in the bark containing parilline, fecula, mucus, albumen. The centre is pure fecula, inert, esculent."

Englewood, Chicago, Ill. *E. J. Hill.*

Foreign Correspondence.

London Letter.

THE meetings of the Royal Horticultural Society in April and May are invariably of more than ordinary interest. The last one was remarkable for the numerous examples of well-flowered specimens and rare Orchids, Anthuriums, Hippeastrums and other stove-plants, hard-wooded greenhouse-plants and hardy flowers. The Orchids included a group of the noble Dendrobium Phalænopsis, var. Schrœderianum, from Messrs. Sander & Co., showing even greater variety in color than we have hitherto seen, besides extraordinary size and vigor of growth. Already one can see that this Dendrobium promises to be one of the very best of tropical Orchids. From the same firm came plants in flower of the new Cypripedium Chamberlainianum, which was unanimously awarded a first-class certificate by the Orchid committee. It is rich in color, peculiar in form, and, while scarcely deserving to be placed among the very best of the Cypripediums, it can hardly fail to rank high as a garden plant if it only proves amenable to ordinary cultivation. Masdevallias included the pretty hybrid M. Courtauldiana, which is now flowering at Kew, and the rare little M. Wendlandiana, interesting as being the only known tropical species of Masdevallia. At Kew it grows and flowers freely in the East India-house. Messrs. Hugh Low & Co. contributed a group of choice Orchids, chiefly Cattleyas, Odontoglossums and Vandas. They also sent the delightful little Angræcum fastuosum, the large A. sesquipedale, beautiful though somewhat out of season, and the dainty little Saccolabium bellinum, which is a specialty at the Clapton Nurseries. Messrs. B. S. Williams & Son sent numerous Vandas, Dendrobium Wardianum and the large-flowered variety of Cochlioda vulcanica, recently introduced and named grandiflora.

The importance of these periodical exhibitions held by the Royal Horticultural Society in London is testified to by the frequent contributions which come from Continental

gardeners. Messrs. Linden sent to this meeting from Brussels some beautiful Odontoglossums, including O. Pescatorei, var. Lindeniæ, which has large purple-spotted flowers, and another variety, also purple spotted, named maculatum. Odontoglossums are cultivated better in Brussels than I have seen them anywhere, and the nurserymen there are fully alive to this. I believe Mr. Linden never misses an opportunity to acquire plants of the choicest and most valued varieties with a view to their multiplication. Messrs. Veitch & Sons sent Dendrobium atroviolaceum and several hybrids, including one raised from D. Pierardii and D. superbum, which they call D. Adrasta. It has soft pink sepals and petals and a pale yellow lip.

The amateur exhibitors were led by Sir Trevor Lawrence, who sent Cypripedium Elliotianum with eight flowers, a beautiful example of good cultivation, and a hybrid called C. lawrebellum (a ridiculous name, pure Choctaw to outsiders!), which is the result of crossing C. Lawrencianum and C. bellatulum. The flowers are in form like those of the first-named parent, their color being rosy crimson with brown-purple lines, the dorsal sepal margined with white, and the petals spotted with chocolate.

From Mr. H. J. Elwes came a grand specimen of Vanda Denisoniana, with a cluster of healthy growths bearing no fewer than eight spikes of large milk-white flowers. Dendrobium primulinum was shown in exceptionally fine form. Several beautiful varieties of Miltonia Roezlii; the distinct Siam variety of Cypripedium insigne; Cattleya Marriottiana, a hybrid between C. Skinneri and Lælia flava; the magnificent Odontoglossum Leeanum. These and many other rarities were conspicuous among the various groups which crowded the exhibition hall.

Cliveas were well shown by Messrs. B. S. Williams & Son, and also by Messrs. J. Laing & Sons, both firms making a specialty of these plants. Hippeastrums were represented by Crimson King (Veitch) and Firebrand (G. Paul & Son), both awarded certificates. There were also large groups of these plants from other nurserymen.

Magnolia conspicua, the Yulan Magnolia, was shown by Mr. Hudson, gardener to Messrs. Rothschild at Gunnersbury House, Acton, where there is a specimen of this noble Magnolia thirty feet high and as much through, and which at this season of the year is always a magnificent picture of snow-white flowers. M. stellata (Halleana) was shown in flower, the type, a rose-tinted variety and a double-flowered form. At Kew this little species is grown in a round bed on a lawn, where it forms a pretty mass eighteen inches high. It is quite hardy here. It also does well when grown in pots and slightly forced for the conservatory. Rhododendron campylocarpum, a hardy species from the Himalayas, with large trusses of large yellow flowers, was shown by the Exeter Veitchs. I may note here R. fulgens, also Himalayan, which is now in full flower outside at Kew among the hardy Rhododendrons. The plant is probably forty years old, and it is now crowded with heads of the richest rose-crimson flowers.

Roses, some of them new; Ericas of various kinds, the most conspicuous being E. ventricosa coccinea and E. Cavendishiana, Epiphyllum Makoyanum and E. Gærtneri, both varieties of one species, which was recently figured in the *Botanical Magazine* under the latter name. A Cineraria named Snowflake Improved, with the flowers wholly white, came from Messrs. J. Carter & Co. It will be a useful plant if its character can be fixed so as to come true from seeds.

Daffodils. There was a special exhibition of these plants, with a special committee to award prizes and discuss the merits of new kinds. The programme for the day also included a lecture on Narcissi by the Rev. G. P. Haydon. It is scarcely possible for any one nowadays to say much that is new about Daffodils, to English growers at any rate. The lecturer traveled along the beaten track, and gave good advice to amateurs and beginners, for whom his remarks were specially intended. He suggested that flower-collectors should be compelled to carry a license similar to a game license as a preventive to the destruction of wild flowers, which at present were being totally eradicated from some localities by the vandal flower and plant collector, who often dug up by the bushel rare plants which could not possibly survive the treatment they got.

London. *W. Watson.*

Plant Notes.

The Narcissus.

NOW that the Narcissus season is here, it may be interesting to note the distinguishing characters of the groups into which this family is divided, and give in a compact form the main points of their structures as a guide to a more careful study of these ever-welcome flowers. The popular name of Daffodil, which is generally used in the garden, is only correct as applied to two forms of Narcissi—i. e., the Narcissus Pseudo-Narcissus, the flat-leaved or Trumpet Daffodils, and N. Bulbocodium (Corbularia), Hoop Petticoat or Rush-leaved Daffodils. In other words, Daffodils are Narcissi, though only the large-crowned Narcissi are Daffodils. A Narcissus-flower is structurally composed of an ovary, the perianth-segments (popularly the saucer), and the tube, otherwise called the crown, the trumpet, the trunk or corona. An inferior ovary is situated at the base of a cylindrical tube. From varying localities along this tube spring the perianth-segments, and beyond these the cup is prolonged. In the Daffodils the six stamens are of equal length, and have the same point of insertion low down near the obconical-tube. In the true Narcissi the tube is much longer, narrower and cylindrical; the six stamens are divided into two sets of three each, which are inserted, one set near the mouth, and the other three midway between the crown and ovary.

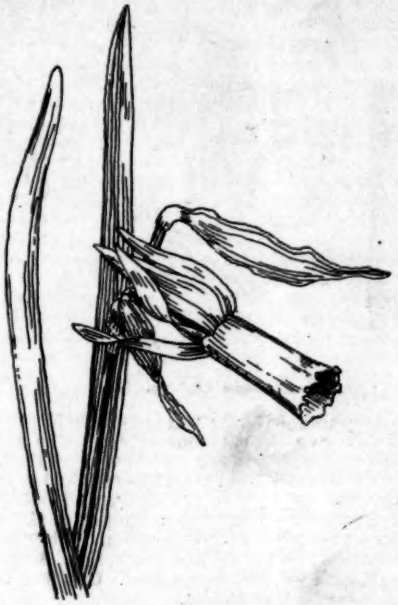

Fig. 32.—Narcissus cyclamineus.

The varieties of Narcissi are endless and beyond the ken of man, and authorities are not yet agreed as to the number of distinct species. Mr. J. G. Baker, of Kew, published in 1869 a clear and concise system of grouping, which has been generally adopted by growers and by the trade. Mr. Baker's groups are based on the length of the perianth-segments as contrasted with that of the cup. The three groups of Baker are:

GROUP I. Magnicoronati, the large cup.
GROUP II. Mediocoronati, the medium cup.
GROUP III. Parvicoronati, the small cup.

Each of these groups is divided into sub-genera, species and sub-species; but for the non-botanical reader and cultivator it will be simpler and sufficiently clear to divide the groups according to the plan of Mr. F. W. Burbridge, of Dublin, into two sections—A, the flat-leaved kinds; and B, the rush-leaved kinds. Under this arrangement we give the different sections with an illustration of a typical flower of each:

Group I. Large cup, crown as long or longer than perianth.

Section A. Flat-leaved. Type, the wild Daffodil of England, and including N. Pseudo-Narcissus; the Ajax varieties of Ha-

Fig. 33.—Narcissus maximus.—See page 209.

worth, and innumerable forms and sizes from N. minimus to N. maximus. All have flat glaucous leaves. The better-known garden forms of this section are—Yellows: Ard Righ, Countess of Annesley, Cyclamineus (fig. 32), Emperor, Golden Spur, Henry Irving, Maximus (fig. 33), Minimus (fig. 34), Obvallaris (Tenby), Rugilobus. Two-colored varieties: Empress, Grandis, Horsfieldii, Princeps, Scoticus, Bicolor præcox. White and sulphur varieties: Cernuus (fig. 35), Colleen Bawn, F. W. Burbridge, Minnie Warren, Moschatus, Pallidus præcox. Double: Telamonius plenus (Von Sion), Capax plenus.

Section B. Rush-leaved. Type, N. Bulbocodium (Corbularia), the Hoop Petticoat Daffodil of southern Europe. Of these there are six varieties, all with the expanded crinoline-like corona (fig. 36).

Group II. Crown half or rarely three-quarters as long as the perianth divisions; the Chalice-shaped crown of Parkinson.

Section A. Type, N. incomparabilis varieties (fig. 37). The varieties of this group are supposed to be hybrids, except Odorus, Juncifolius and Triandrus. Garden forms of these comprise: Self-yellow varieties. Yellow varieties with orange cups; Gloria Mundi, etc. Sulphur-colored varieties; Sir Watkin, etc. Peerless varieties; Cynosure (primrose perianth, orange cup), Princess Mary (white perianth, orange cup). White varieties; Mary Anderson, etc. Leedsii varieties, with Eucharis-flowered chalice, cup white; Leedsii, Amabilis, Duchess of Brabrant. Humes' hybrid straight-crowned Daffodils. Backhouse's hybrids with coffee-cup-shaped crown. Nelson's hybrids with goblet-shaped cup; Nelsoni major, Aurantius, Pulchellus. Double varieties; Aurantius plenus (Butter and Eggs), Albus plenisaurantius (Orange Phœnix), plenus sulphureus (Codlins and Cream or Sulphur Phœnix).

Section B. Types, N. Odorus (Campernelle Jonquil), N. triandrus (fig. 38), N. juncifolius (the smallest Rush-leafed Daffodil).

Group III. The small-crowned Daffodils or true Narcissi.

Section A. Types, N. poeticus, N. Tazetta. In this section are comprised the well-known N. poeticus, also the various bunch-flowered Daffodils, as Paper Whites, Grand Monarque, Soliel d'Or, Staten General, etc.

Section B. Types, N. gracilis, N. rupicola (fig. 39), N. Jonquilla; the Jonquils are the best-known form of this section.

A review of the genus Narcissus to 1887 is embodied in Baker's *Handbook of the Amaryllideæ*, 1888; Burbridge's *History and Culture of the Narcissus*, published in 1875; *Ye Narcissus or Daffodyl*, by F. W. Burbridge and P. Barr; and Hartland's *Album of Daffodils*, will all prove useful to those interested in the study of this genus.

In this climate the flowering of Narcissi is influenced by so many sudden changes of temperature that it would be impossible to give any definite or even general idea as to the succession of flowers to be expected with any certainty. As to the varieties the Ajax section comprises the largest number of favorites, a good selection being for garden purposes Emperor, Empress, Horsfieldii, Grandis, Obvallaris, Golden Spur, Maximus, Countess of Annesley, Ard Righ, Rugilobus, Cernuus, Pallidus præcox and Telamonius plenus. A fine selection from the other sections, omitting Polyanthus, is Sir Watkin, Barrii conspicuus, Duchess of Westminster, C. J. Backhouse, Princess Mary, Poeticus ornatus, Gloria Mundi, Cynosure, Nelsoni, Poetarum, Poeticus plenus, Orange Phœnix, Capax plenus.

Elizabeth, N. J. *J. N. Gerard.*

Cultural Department.

A Selection of Strawberries.

THE list may now be fairly divided into early, medium and late. Crystal City till recently was our best very early. Michel's Early did not prove to be what was hoped for and promised; the berry lacks quality, and the plant productiveness. Beder Wood is, on the contrary, a really good berry, very productive and of good size. Mr. Crawford thinks it the best very early berry that he has yet grown. Leader has secured three prizes from the Massachusetts Horticultural Society. It is a very early sort, and, I believe, is destined to secure the very foremost place. Lovett's Early is another new candidate of great promise. It is said to be larger than Wilson, and more prolific than Crescent. The color is bright crimson and the shape perfect, while the flavor is high. It gave ripe berries last year on the 22d of May in New Jersey, which is something remarkable. It is almost as early as Crystal City, and we may, therefore, expect to discard that inferior fruit very soon. What we have wanted was a good market and table fruit as early as Crystal City. We can confidently plant Leader and Lovett's Early and Beder Wood.

Of medium berries Cumberland comes so close after the early as to deserve a mention at the head. It is an old sort that very few are willing yet to discard. Mrs. Cleveland is, on the whole, one of the best berries I ever raised. It is large, but not largest; good flavor, not the best; brilliant in color, and enormously prolific. It begins early and bears long. Among forty new varieties I hold Mrs. Cleveland one of the very best. Crawford has very large and excellent berries, but it has not proved regular in size or as prolific as Mrs. Cleve-

Fig. 34.—Narcissus minimus.—See page 209.

land. Haverland is splendid when the season is not too wet, but it is sometimes watery and soft. The berry is of the largest size, and of good, but not the best quality and color. Gillespie, a seedling of Haverland, bids fair to outstrip it. One of the

most wonderful berries in my trial-beds has been Thompson's 51; it is not yet introduced. It is big enough for a pear. Lida I reckon among the best, and it should not be discarded for new favorites. Bubach is among the leading sorts, but it

Fig. 35.—Narcissus cernuus pulcher.—See page 209.

has a pistillate flower. Edgar Queen is a monstrous berry of excellent quality. The fruit of Saunders is finely shaped, very large, and of a fine glossy red. The flesh is also red, and the flavor fine. Pearl I have always liked. The plant is a capital grower in a large stool, while the berry is both handsome and excellent. Enhance is probably ahead of all in cropping, but not in quality. It is an enormous berry, not always well shaped. Parker Earle is remarkable for the favor it has received in widely separated regions north and south. The berry is of fine size, not largest; long and necked, firm and handsome, and an extraordinary cropper. It is almost late enough to be classed in that list rather than as medium-early. Warfield and Crescent I reject, as I do Wilson, because they are too sour for a good home berry. As shippers they are, of course, good; but there are just as good shippers that are much larger and sweeter, and I am quite of Mr. Terry's opinion, that it does not pay to grow berries that do not average large. The time lost in picking is great, and in market the biggest are always in demand; the others are often not wanted, and must sell at low figures.

Of the late sorts Manchester is old, but still good, only a little too tart. Yale is winning its way as a really first-class berry, and extra for canning. It is solid and dark red, and colors finely in the can. The quality is of the best. Gandy has some strong friends, but many report it as not sufficiently prolific, which is about the truth of the matter. A new berry is being pushed as something remarkable, and remarkably late—the E. P. Roe. It certainly is very late, the last fruit having reached market about the middle of July. It resembles the old Kentucky, and will bear testing before much planting.

I have not mentioned in the list of main croppers Bubach with sufficient emphasis, because I do not yet see one berry that should crowd this out; and as for Sharpless, which should be ranked almost with the late, it is with me invaluable for quality, and good for quantity. Others do not find it to have either of these qualities. My soil is clay, and moist. It seems very probable that Beverly will prove one of the principal rivals of the Bubach and Sharpless. It has received a large number of prizes and has a perfect flower, while Bubach is pistillate.

It is impossible to make out a list of Strawberries for the whole country and for all soils. Cumberland and Bubach have come as near as any to being universal berries. I grow my berries on an eastern slope, a warm soil for clay, and keep it well fed. I plant in hills, and let them run into matted rows after the first year's good crop. The best time to plant is invariably very early in the spring.

Clinton, N. Y. *E. P. Powell.*

Flower-garden Notes.

THESE are busy times in the hardy flower-garden; all protective coverings have been removed, and plants are coming up vigorously. No time should be lost in moving plants now, as the less growth they make before they are planted the more certain the success the coming season. Some plants never do so well as when planted while small where they are to remain, and I am convinced that this is one of the secrets of success with that beautiful Columbine, Aquilegia glandulosa. Many people prefer large plants, and it must be admitted that, in some cases, they are desirable, but many of the more robust sorts, such as Delphiniums, Campanulas, Aquilegias and Phlox, grow with greater vigor if they are transplanted when small. The first flower in the garden this season was Primula denticulata nivalis, the white form of a well-known Himalayan Primrose. The spikes of flowers come before the foliage, as in P. rosea, and are pure white, with a yellow eye. These were raised from seed a year ago and planted in a shady corner in a group with P. rosea, which is now also in bloom. The typical P. denticulata is also perfectly hardy, and the flowers are lilac-colored. P. cortusoides is also in flower, and is a pretty little species, often said to be the same as P. Sieboldii, but there is a vast difference from a garden standpoint, the last-named plant being much better, the numerous varieties making a charming group in themselves. We are so accustomed to seeing P. Sieboldii grown indoors in pots that we are apt to forget how well it thrives outside in a shady moist situation if slightly covered in winter, as the roots are rhizomatous and easily lifted by frost. Those who possess a rock-garden would do well to try these Primulas, selecting for them moist shady nooks. The sun in summer is more distressing to them than the cold of winter.

Auriculas are now in full beauty in cold frames. These are so easily managed in this way that they ought be taken up by many who can afford a frame in a shady place in summer. A bunch of Auriculas when cut makes a sweeter and prettier nosegay than almost any other Primrose. The old-fashioned double white Primrose has been in bloom more than a month, and is now turning pink, but it has been in bloom in good condition for a longer time than usual with Primulas. This was wintered with the Auriculas, and is very easily propagated by division; seeds are not produced.

The long-continued dry weather is somewhat unusual at this season, as we have had no rain for four weeks, and the consequence is manifest in the Narcissus-beds; the flowers are coming short-stemmed, and water is sadly needed at the roots. This season, as last, N. bicolor præcox was in bloom a week before any other kind, and a few days ago it was the only kind in bloom but Ard Righ. N. obvallaris and Golden Spur soon followed, and we have now over a dozen kinds in full bloom.

Fig. 36.—Narcissus monophyllus.—See page 209.

There is a great future for Golden Spur and Countess of Annesley (the Castlewellan Daffodil), the last being especially free-blooming and vigorous, increasing threefold annually. By the time this is published the best kinds will all be in bloom.

Salvia argentea is a plant usually grown as an annual for the beauty of its foliage, and in the early part of the day when sparkling with dew it presents a pretty picture in the front row of a border. It was a surprise to see plants set out last year

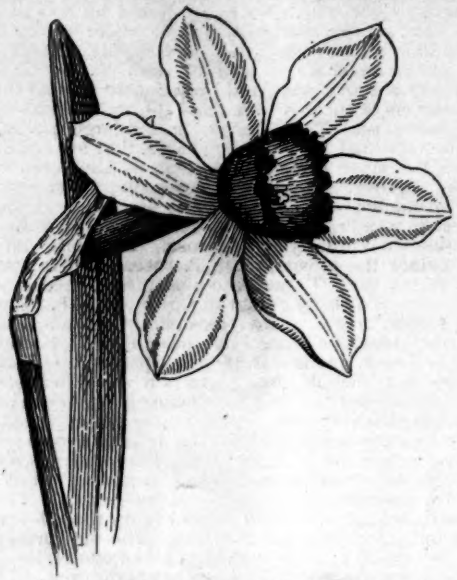

Fig. 37.—Narcissus incomparabilis.—See page 209.

coming up strong and unharmed by the winter, as there are no other Salvias that will live out unhurt in this locality, and even the garden Sage has to be treated as an annual. Every spring one is tempted to ask why Mertensia Virginica is so seldom seen in gardens, since there is nothing more beautiful in its season. It is very plentiful and easily obtained in some sections, but rarely seen in gardens. The beautiful blue flowers last well when cut.

South Lancaster, Mass. *E. O. Orpet.*

Flowers in Bloom.

AMONG the flowers now in bloom is a distinctly colored Grape Hyacinth, named Muscari Scovitzianum, and a valuable addition to this interesting group. The long, prostrate leaves were produced in early winter. The flowers appeared in middle April. The flowers individually are rather small, but are of a beautiful opaque, pure blue, with no trace of purple, and with a white rim. Single bulbs have thrown three spikes of flowers. This would be a fine variety to associate with M. botryoides alba, whose pure white flowers are now in their prime. M. Scovitzianum is an introduction of Herr Leichtlin, as is also

Fritillaria Dalmatica, an interesting but not showy plant. The flowers are bell-shaped and single, on stems about six inches high, and droop gracefully. The petals are green outside, stained brown, and inside a deep brown, mottled and stained with green. In suitable positions, the dwarf and small-growing Fritillarias are interesting garden-plants, better adapted to the rockery than an open position, however.

The charming hybrid Primroses, with their bright flowers shining over a background of tender foliage, are among the choicest of the flowers of the season, and of the easiest culture. With me they prove very reliable, perfectly hardy in winter, and not burnt up by summer heat. I have before mentioned that they do well in my garden on a raised border, a few feet from the south side of the house, where it is often very warm. My friends at a distance, with some experience of Primulas, often express what I may perhaps call polite surprise at this fact. But it is only another indication that in our various gardens we have quite varied experiences. On my part, I do not know how others establish Primroses in grass, as one sees frequently noted and advised. In such cases it would be interesting to know what variety of grass is found suitable for the association. My garden being surrounded by vacant land, we are supplied with a large assortment of grasses, and apparently all of these, without exception, grow vigorously enough (outside of the lawn) to strangle anything but the most vigorous plants. My border of hybrid Primulas, seedlings three years old, is of a vigorous strain (Dean's), but has been neglected. The crowns have not been divided and are much crowded. Where the grass had been taken out they are still vigorous, but most of the plants this spring were overcrowded with grass, and were rapidly becoming exterminated. Another strain of Primroses, not far removed from P. veris, shows even less vigor when attacked by grass. P. elatior (Polyanthus) has also largely disappeared under its encroachments. Primulas should, no doubt, be divided every second year at least, and given good culture, as they are gross growers and increase rapidly.

Auriculas are other members of the Primula family, now gradually showing their beautiful flowers. These alpine Primulas are kept under glass, to protect the meal from wet and to preserve the purity of the blooms. Choice Auriculas come under the head of precious flowers, and are well worth the care which they undoubtedly require. While they are hardy one does not care to plant out any but varieties discarded from the collection as not being first-rate, the others being kept always in pots or planted in a frame under shelter.

This is one of the oldest favorites of the florists' flowers, and the small but devoted band which makes them a hobby in England seems to me the most interesting group of flower fanciers. An Auricula fancier discusses the points of his favorite with an old-time ingenuousness and such a flood of reminiscences that one heartily enjoys his amenities and enthusiasm, while not caring at all whether the paste and the eye of the flowers are in proper proportion.

One of the Squills lately sent from the Taurus mountains is a variety of Scilla bifolia, named Whittali in honor of its collector. This variety is quite distinct, the leaves being more numerous than in the type, and channeled. The flowers are borne in long racemes and are upright. Individually they are small, with narrow petals, and somewhat resemble Chionodoxa Sardensis. The first sample of these, received in 1890, flowered earlier than the lot from a later collection.

A few lingering flowers of Anemone blanda remind me to say that though this valuable plant is perfectly hardy, it evidently has a choice as to suitable position. It does much the best with me in a warm snug corner, protected on all sides but the south, and where it is baked all summer. In this position it came into bloom in January, the tubers having been undisturbed for three years. Mr. E. Whittall sent me for trial last fall a large lot of what was said to be a finer and more robust form, A. blanda robustus. The tubers of these have not

Fig. 38.—Narcissus triandrus.—See page 209.

been so happily placed, being in colonies in more exposed positions, and though, as was to be expected of newly collected pieces, not flowering freely, yet they seem still more affected by being planted in exposed positions. Such flowers

of this variety as have appeared give indications of being very handsome. Herr Leichtlin's varieties, A. blanda alba and A. blanda Cypriana, have also, in exposed positions, confirmed the

Fig. 39.—Narcissus rupicola.—See page 209.

conclusion stated, that protection and subsequent baking are desirable for these plants.

Elizabeth, N. J. *J. N. Gerard.*

Campanula pyramidalis.—Contrary to expectation this plant has proved quite hardy here where the commoner C. Medium died. It is one of the very best for pot-culture, having a compact self-supporting habit. Compared with the Canterbury Bell the flowers are small, but they make up for their lack of size in number. They come into bloom early in June, and are very useful for standing on steps and about entrances of residences.

Although a true perennial, when grown in pots it is better treated as a biennial, as excessive blooming destroys the symmetry of the plants, so desirable when grown as specimens. Seeds sown in spring will produce fine crowns for potting into nine-inch pots in the autumn. It is better to store the plants in a frost-proof pit, otherwise they will lose their lower leaves, and look leggy. As single specimens in a rock-garden this Campanula serves in a charming way to break up the monotony so often noticeable where nothing but low-growing herbaceous or alpine plants are used. For this purpose the white variety is the more effective.

Alstrœmeria pelegrina, var. **alba**, the "Lily of the Incas," is described in European catalogues as tender, and it is further recommended that "a warm spot be selected for it." The further my observation goes the more I am convinced that the test of hardiness is not in proportion to the lowness of temperature. This plant has proved quite hardy here for two winters, even in exposed situations. It will be fortunate if this lovely Amaryllidaceous plant should prove quite hardy, being an excellent subject both for border and cutting purposes. Plants come quite easily from seed or by division of the roots.

Medinilla magnifica is now in bloom in the tropical plant houses belonging to H. H. Hunnewell, Esq., Wellesley. It comes from the East Indies, and was once commonly grown, no collection of flowering stove plants being considered complete without it. It is gorgeous when in bloom, with long verticillate, drooping panicles of pink flowers; the appendiculate anthers, a character peculiar to all Melastomaceæ, are strikingly conspicuous. When out of bloom it is a very ungainly shrub, very subject to insect pests, particularly the mealy bug.

Primula rosea is very bright this spring. It easily loses color, and is past very quickly if the weather is unseasonably warm, as is often the case during April. This spring has so far been very cool, and Scilla Sibirica and Chionodoxa Lucillæ have been in fine condition for a long time. One or two hot days will finish them.

Wellesley, Mass. *T. D. Hatfield.*

The Forest.

The Forests of California.

AT the last meeting of the American Forestry Congress, Hon. William Alvord, the president of that body, read a paper on this subject, from which we make the following extracts:

There is much about the silva of California that is broadly distinctive, and not met with in any other part of the world. Some of the trees are larger and probably older than any found elsewhere, except perhaps among the Eucalypts of Australasia, and they are not confined to small groups or belts, but are in great forests, some of which cover areas nearly as large as the whole of New England. There are millions of trees any one of which would yield enough lumber to build a good-sized house. Twenty millions of acres of California are covered with magnificent forests; the remainder is sparsely wooded or wholly treeless.

The heavily timbered districts are confined to the Sierra Nevada mountains on the east, the mountainous regions in the northern half of the state, and what is known as the Redwood belt, lying along and adjacent to the north-western seacoast. The heavily timbered portion of the Sierra Nevada covers a territory five hundred miles long by seventy wide; the Redwood belt and the timbered mountains at the north comprise nearly half as much more. The whole aggregates about 50,000 square miles of lumber-producing forests for the entire state, which contains 158,000 square miles.

There occur in other sections of California patches of lumber trees, the most important of these being in the Central Coast Range and in the San Bernardino and Kingston mountains; the product of the latter, situated in the desert regions of the south-east, is more valuable for fuel than for building material. The inferior growth consists mainly of several varieties of Oak and Pine, with some Madroña, Maple, Walnut, Alder and Ash; the Sycamore, Willow and Cottonwood grow along the water-courses and in other moist localities. The few trees that grow in the desert-lands in the south-eastern angle of the state are the Mesquit, Palm and the Paloverde; the Palms, of which there are several varieties, are almost worthless, being alike unfit for fuel or lumber, and they do not bear edible fruit nor furnish shade. These and the Cactus are signs of aridity and barrenness.

The chain of mountains which skirts the easterly border of the state has an average height of about 8,000 feet, with long stretches much higher, some of the peaks attaining an altitude of 14,000 feet. The Piedmont country on the west, which attains an elevation of about 2,000 feet, and varies in breadth from fifteen to twenty-five miles, is covered with a sparse growth of scrubby Oaks and Pines; at the upper edge of the domain the more stately and valuable forest begins. While the foot-hill Oaks are of several kinds, the Pines are mostly confined to a single variety, the Pinus Sabiniana, called by Californians the Digger or Nut Pine. The last name is given it on account of its edible nut, which constitutes one of the staples of subsistence of the Digger Indian. The Nut Pine, though little fit for lumber, makes a fuel nearly equal to Hickory, and serves tolerably well for mine-supports. Mingling with the Oaks and Pines are various dwarf trees, also much shrubbery, chiefly the Ground Oak, Chemisal, Buckeye and Manzanita. These are worthless save for firewood, and they are being cleared off in many places since the ground is found to be excellent for fruit-trees, and many orchards are being set out here.

Leaving the Red foot-hills we enter the zone above, with its steeper acclivities and its wondrous wealth of woods. While nearly all that is valuable consists of conifers, there are Oaks and many other deciduous trees in considerable numbers up to a height of 7,000 or 8,000 feet; also the Nut Pine up to 4,000 feet. This is the only conifer that does not thrive at a higher level.

While there is considerable shrubbery at these levels, the forests are so little obstructed with undergrowth that a wagon can be driven through them almost everywhere without much trouble. The woods lower down are still more open. The forests in this higher zone take in nearly the entire cone-bearing family, the Pine, Spruce, Fir, Cedar, Juniper and Cypress being represented, and they thrive in all latitudes and levels

up to about 9,000 or 10,000 feet. Above this the trees dwindle in size and the wood deteriorates in quality. At about 12,000 feet of altitude vegetation ceases, the mountains above are of naked granite and mostly covered with snow all the year round. In the high and heavily timbered lands the conifers are represented by fourteen genera and fifty-two species, there being sixteen or more species of Pines, all somewhat different from their eastern congeners.

After leaving the foot-hill country the first of these majestic trees encountered is the Yellow Pine (Pinus ponderosa), a tree of most noble presence. It is widely disseminated from central Oregon south to Mexico, and laterally from the Coast mountains east, across the cascade and the Sierra Nevada ranges. In size and in value for lumber it ranks next to the Sugar Pine, which comes in a little higher up. In the mountains lying toward the sea, as also in the arid interior, the Yellow Pine is considerably smaller, but on the Sierra it attains a height of two hundred to three hundred feet and a diameter of ten to fifteen feet. It is among the best of our timber-trees, the wood being soft yet firm and unusually heavy. A greater amount of lumber is made from it than from any other tree in the Sierras.

At an elevation of about 3,000 feet the Sugar Pine (Pinus Lambertiana) begins to appear; its best development is reached at about 5,000 feet, and it extends the whole length of the big timber-belt and covers a zone from twenty to thirty miles in width. Its grand colonnades run parallel with the general trend of the Sierra. In size it ranks next to the Sequoia gigantea, which in all other respects it excels. As a lumber-tree it has no superior. The wood is nearly white, close-grained and solid. No other timber works so easily, nor does any other crack or warp so little, for which good qualities it is in great demand for cabinet-work and interior finish. It is largely used on the Pacific coast, and there is an export demand for it. The sugar made from the sap which exudes from it when cut or otherwise wounded, is utilized for food by the Indians but is not relished by the whites.

Being so valuable for lumber the destruction of the Sugar Pine has been rapid, both the saw-mill man and the shake-maker having until recently been allowed to depredate upon these trees at pleasure. As many of them do not split freely, it was the practice of the early shake-maker to fell one tree after another until he had found one that would rive to suit him. The rejected trunks were left to rot on the ground or to be consumed by the sweeping fires so common in these forests. Under this practice thousands of these trees were destroyed for no other purpose than to prove to the satisfaction of these vandals that they did not split freely. Through the enactment of laws sufficiently stringent to terrorize this class of woodsmen, our Sugar Pines and other valuable trees are now pretty well secured against such wanton and criminal waste.

The white Silver Fir, by reason of its great strength and durability, is much sought after for railway-ties, bridge-building and mine-timbers. Some varieties of the Spruce and Hemlock also make a tough, but rather coarse lumber. The home of these trees, which nearly equal the Yellow Pine, extends along the whole length of the Sierra, reaching laterally from 3,000 to 8,000 feet, the best being found about midway of this belt.

The Incense Cedar (Libocedrus decurrens) is another most useful and widely disseminated tree, its habitat reaching from southern Oregon to Mexico, and from 2,000 up to 6,000 feet above the sea-level. In height it ranges from 100 to 150 feet, in diameter from three to six feet. The timber is adapted for a great variety of uses, being light, durable and strong; it is used in railway, ship and boat building. Having a straight grain and riving freely, great quantities of it are split into shakes and pickets, and formerly it was made into clapboards. The bark is thick and tough, and excellent for filling in boggy places in road-building. This Cedar is never found in groves, but is scattered through forests of the Sugar Pine, Yellow Pine, Spruce, Fir and Hemlock, and is often called the White Cedar of California.

Correspondence.

German Forests as I Remember Them.

To the Editor of Garden and Forest:

Sir,—My memory runs back to the Revolutionary riots which took place in Germany in 1848, when the enraged people resorted to acts of violence in revenge for existing evils. Vibrations from the centres of fermenting dissatisfaction in Paris, Vienna and Berlin had reached provincial cities, and my native place in Mecklenburg was not exempt from this disturbing visit. Here the rage of the people was directed mainly against the head, or, as he was called, the Senator of the Forest Department, which was a distinct branch in our municipal government. The furious mob, not finding his person, demolished all his belongings, and not a particle of what could be broken in or about his house escaped destruction. Now, why was this punishment inflicted upon him? The charge was that he had appropriated to his own use certain sums received from the sale of timber and wood, and, what was considered a still more serious offence, he had ordered more trees to be cut from the forests than had been allowed by the higher authority, which consisted of a committee of representative citizens appointed for this purpose, whose duty is to designate at certain intervals those trees which, on account of interference with the growth of others or for some other cause, it was thought best to dispose of.

In well-regulated communities the preservation of the forests is a matter of the greatest concern to the inhabitants. With us they brought in certain valuable revenues to the income of the city besides conferring direct benefits to individual citizens. For centuries certain inalienable rights had belonged to the lots on which our houses had been built, under which, according to their valuation, a certain amount of wood could be had for the simple fee of cutting. Persons who did not own real estate, after securing permission which cost nothing, although it was placed upon record, might gather the dry wood which they needed on designated days and in certain places under the supervision of the City Forester or his aids. They could use a wheelbarrow for carrying and a hook to break the dry branches, but no hatchet could be carried. Any one who might be discovered carrying a concealed hatchet had his permission at once revoked. The dry leaves or Pine-needles were also gathered under restriction. The people had learned through centuries of experience, dating back to the times before the Roman occupation, that their forests protected them and helped to provide a means of living for them, and therefore they have always been held in veneration. The result of this long experience is a well-regulated system of tree-culture. It is a luxury to walk through some of these groves. In the oldest sections the giant trees stand in such regular rows as to suggest the thought that they had been originally planted at regular distances.

When wood is sold for building purposes or for use to the different artisans, such as coopers, wagon-makers and joiners, auctions are made, and no one from another place is allowed to bid for it, the privilege belonging exclusively to the residents and citizens. Even the stumps of the trees are dug out and sold for firewood to brick-makers and bakers. In the Pine-woods the long roots are carefully gathered and worked into baskets and similar utensils. Pea-brush, bean-poles, Christmas-trees and decorative greens are cut under supervision, and no slashing and hacking to the right and left is allowed. Now, what is the result of all this care? The people point with pride to their forests, which are wealth to them and a blessing in many educational ways. A fire (Waldbrand) is considered a calamity of the direst sort. In the dry season, when leaves have fallen, no smoking is allowed in the woods. Such historical forests as Wienerwald, which belongs to Vienna, the Spreewald, which belongs to Berlin, and many others are places of renown, but less famous ones scattered throughout the country are cherished and loved by the people beyond description. They feel that they could not exist without them. Besides the value from their wood and protection, in other ways they have great historical interest. Here, we have been taught, are the remains of the graves of the Huns, and here the caves where the Vikings lived and hid their treasures. Here, again, are beautiful openings, where are found such floral treasures as the odorous Violets and Lilies-of-the-valley. In the dark Oak-woods we may startle some deer or wild pigs, and in the Beech-woods are the "horsts" of aromatic berries, and the Woodruff (Asperula odorata), which grows in such great clusters that the whole population goes out to gather it for decorating the houses when they plant the May-bush, and all the doorways and stairs are entwined with it at the Pfingsten celebration.

We German people miss our forests when coming to this country. We had read the descriptions of the great woods in Fenimore Cooper's Indian tales, but too often we have found nothing but second or third growth trees with tangled underbrush, or burned stumps which told where trees had once stood. It would be well if our people could realize that in the care of their woodlands there lies a refining influence which helps to make a strong home sentiment and nobility of character. We cannot overestimate their economic value, but if every town and village had its forest, in which all the people

felt an affectionate interest, it would strengthen local attachment and add a fresh charm to rural life.

Hartford, Conn. *Wilhelmine Seliger.*

Hardy Plants at Short Hills.

To the Editor of GARDEN AND FOREST:

Sir,—It would add very much to the attraction and probably the property value of the average American village to follow the example of Short Hills, New Jersey, and make the vicinity of the station and entrance to the hamlet picturesque. Certainly the requirements are very simple and the expense very slight, the details being only well-kept paths and roads and well-arranged clumps of shrubs, the commonest of these being the best for the purpose. The Spiræas, Forsythias, Japanese Quinces and others at this season make such beautiful masses, that, familiar as they are, we gain pleasure from them at every view, and even those who are whirled through Short Hills on the train must carry away a pleasing impression.

Looking over the hardy-plant nursery of Pitcher & Manda, which occupies the area nearly opposite the station and borders on the main drive, where handsome plantations are maintained, I was reminded of a late editorial of GARDEN AND FOREST calling attention to the fact of our great dependence on bulbous plants for an early display of flowers in this latitude. Of course, few bulbous plants except surplus stock are planted out in a commercial establishment, and the season so far having been abnormally cold herbaceous plants have made little progress. Adonis vernalis seemed least affected by chill, and its cheerful flowers and bright foliage made handsome clumps of color. The Aubrietias were well forward, A. Eyrii, A. Græca and A. purpurea coming on in the order named. If planted on a rockery these valuable plants would be still earlier. The Dwarf Phloxes, P. subulata and P. amœna, were well forward, while in a damp spot the double-flowered Marsh Marigold (Caltha palustris) was covered with its Buttercup-like flowers. In the frames Primula Sieboldi was covered with its graceful clusters of red flowers. There were also stray flowers of Papaver alpinum and a few lingering Hellebores. Of the large variety of Irises grown only I. biflora was showing flowers, in shades of purple. This seems in the way of I. pumila, very dwarf, and suitable for dry edgings. In one of the houses was a collection of herbaceous material which had been forced for Easter. The Pæonies were well grown and flowered, and seem valuable for gentle forcing, and certainly make bold decorations. Some Foxgloves were about as good as one sees in the open. A large stock of Azalea Indica and A. mollis is also carried here, and perhaps the most enjoyable part of the establishment at this season is the section containing these beautiful plants—brilliant above most others. It speaks much for the demand for Orchid-flowers that in the houses containing so many thousand plants there is scarcely a flower to be seen, the demand at Easter having taken every available flower on the place, with inquiry for more. Several scores of cases of Orchids were just arriving from collectors in South America, a field which the firm seems to have entered in full force. One might pass a day very pleasantly in wandering through the Palm-house and the numerous side houses, which contain wonderful collections of Bromeliads, Ferns, Dracænas, Anthuriums, Crotons, Nepenthes, Palms, etc. In the Fern-house was a grand specimen of the new Pteris Victoria, one of the most beautiful introductions of recent years. A curious thing is the Shingle-plant (Rothos flexuosus), an Aroid from India, which, growing on a block or wall, creeps up with rooting-stem and throws out leaves alternately to right and left, which partly overlap and lie flat. Calamus ciliaris is a rare Palm with fine foliage, which is wonderfully soft and velvety to the touch.

New York. *G.*

Sabal Palmetto.

To the Editor of GARDEN AND FOREST:

Sir,—The editorial reference in GARDEN AND FOREST to a letter of Monsieur Naudin on the absence of the Sabal Palmetto in the gardens of southern Europe is of interest in southern California. We also have had no success with this Palm. The only living specimen that I know of is on the Kirmeloa Ranch. This Palmetto is now twelve years old, and yet it is still no tree. The trunk is three feet from the ground to the leaf-stalks. These are long, and look vigorous. The handsome crested curve of the new leaves is very marked. In the same garden there are a number of other Palms, all of which make a fine showing for their age (twelve years). The California Palms, for instance (Washingtonia filifera), are in a number of instances over fifty feet high. The Chamærops are between twenty and twenty-five feet, and the Date Palm, which is a slow grower, about the same. This garden is exceptionally well situated for the Magnolia fœtida (grandiflora), for the most vigorous specimens of this beautiful tree in southern California are found there. As this tree is a native of the south, like the Palmetto, it would seem a reasonable presumption that the Palmetto should at least do as well in this garden as anywhere in this section. The Magnolia, as a rule, does not make a large tree in southern California. Speaking generally, it is most successful when near the coast. In the interior, where the air is very dry, it is smaller and flowers but little. At Riverside it lives, but amounts to nothing. My idea is that the long dry summers, with cool nights, are unfavorable to both the Magnolia and the Palmetto, but less so to the Magnolia. The Magnolia, while never so large as in the south, is still a favorite ornament in our Coast belt. The Riviera, like southern California, has a comparatively dry climate and cool nights, but it has a lower average winter temperature and naturally an inferior soil. The dryness common to both these climates may be the common cause for the practical failure of the Palmetto.

Lamanda Park, Cal. *Abbot Kinney.*

Araucaria excelsa.

To the Editor of GARDEN AND FOREST:

Sir,—May I ask for some information about the beautiful evergreen, Araucaria, which we see offered so abundantly in the florists' shops in New York? What is its home and history?

New York. *J. W. K.*

[This Araucaria is a native of Norfolk Island, and it is frequently known as the Norfolk Island Pine. It is only within three years that the value of young trees for decoration has been appreciated in this country, and last year it was extensively used on or about Christmas. The plants are propagated either from seed or cuttings, both being rather unsatisfactory, as it is difficult to import seeds fresh enough for germination, and, on the other hand, the plants furnish but few cuttings, and these are difficult to root. They must be grown in a cool greenhouse, with an abundance of air and moisture at the roots. Plants raised from cuttings are generally more bushy than those raised from seed, which are spindly and not so well furnished at the base. The great majority of plants used here are imported. —ED.]

Notes.

Mr. Gifford Pinchot, of this city, has been appointed to make the collection of woods from the state of North Carolina for the Columbian Exposition.

Iceland Poppies are opening in the gardens about this city, although the plants were covered with three or four inches of snow a little more than a fortnight ago.

Several forest-fires, of an extent which would excite comment even in this country, have recently occurred in Prussia, devastating large areas near Berlin and near Werdohl, and destroying 1,750 acres of good timber in the vicinity of Niebeck.

The Norway Maples near this city are flowering in unusual abundance this year. Many of the trees are completely covered with clusters of light straw-colored blossoms, and their round heads are conspicuously beautiful now in the sunshine.

In the neighborhood of this city very many Retinosporas and other coniferous evergreens have died during the late winter and early spring. In many cases the trees seem to have been injured by high winds and a low temperature which followed close after a very few warm days in early March.

Our native Carpinus, or Hornbeam, is one of the most ornamental of our small trees. Its clean Birch-like foliage in the summer, its furrowed bark in the winter, and its trim appearance at all times should encourage its more general use. For a week or so past its catkins have pushed suddenly forward before the leaves so as to cover the tree with a mist of soft green, and present a special feature of the landscape on the borders of swamps and streams.

A correspondent of *The Garden*, London, remarks on the deficiency of color in the English Daffodils this year. In the springs of 1890 and 1891 the crowns of several varieties of the Incomparabilis class, such as Leedsi, Cynosure, Princess Mary,

etc., were remarkable for the brightness of their orange tints. This year they have not a single tint of orange. It is suggested that this lack of deep color is due to unusually rapid development. There certainly is a marked variation in the color of the same flower in different seasons, and the causes of this variation suggest an interesting field for investigation.

In order to discover the amount of copper which remained on fruit from vines sprayed with the Bordeaux mixture ten pounds of grapes at the State Experiment Station in Amherst were taken, and the bunches selected were those which had the largest amount of copper mixture adhering to them. In one sample not a trace of copper could be found, and in the other two one-thousandths of one per cent. of oxide of copper was found, an amount so small that one would need to eat from half a ton to a ton of these grapes, stems, skin and all, to obtain any injurious effect.

In Mr. Blomfield's recently published book on *The Formal Garden in England* he quotes from a sixteenth century author, who, in writing upon house-building, declared that the chief prospect of a house ought to be east, and especially north-east, because the "est wynde is temperat, friske and fragrant." Other English authors of the time repeated this assertion, which seems curious enough to those who know what the east wind really is in England; and the fact, says Mr. Blomfield, shows how writers of that period borrowed wholesale from the Italians, "without either acknowledging the source or correcting their statements by local experience."

In a late bulletin from the United States Department of Agriculture on spraying fruits it is estimated that no less than 50,000 fruit-growers in the United States habitually spray their trees and vines against such diseases as the apple scab, the black rot of the grape, etc., while five years ago there was practically nothing known of the subject. In order to get a direct answer to the question whether this practice paid, 250 grape-growers in different parts of the country last year made a series of observations for the purpose of obtaining definite information as to the value in dollars and cents of the spraying treatment for grape diseases. The facts reported by these men show that the actual profit to them over all expenses resulting from the treatment of black rot and downy mildew was $37,000.

In *Meehans' Monthly* for May there is a note from Professor Maisch on a remedy for poisoning by species of Rhus which is worth trying by all who are susceptible to injury from these plants. The remedy is as follows: Saturate a slice of bread with water, cover one surface of the slice with finely scraped washing-soda, and apply this side to the affected part. If the bread becomes dry drop water on the outer side, so as to keep it thoroughly moistened, and remove the poultice in about twenty or thirty minutes. If necessary, it may be applied a second time in the course of a few hours. Another remedy for the same poison is given in the same magazine by Mr. John M. Dunlop, of Milwaukee. The remedy is to paint the parts affected with collodion with a small brush. It shuts out the air and affords instant relief.

The city of Genoa proposes to solemnize the fourth centenary of the discovery of America by international congresses of societies of geography and natural science; and the Italian Botanical Society invites the botanists of all nations to assemble in Genoa on the 4th of September. The Botanical Congress will last until the 11th, and the Italian Botanical Society is arranging for various excursions on the shores of the Mediterranean and in the Maritime Alps. During the Congress the new Botanical Institute, built and presented to the University of Genoa by Mr. Thomas Hanbury, will be inaugurated, and an exhibition of horticulture and of products exchangeable between America and Italy will be held. Inquiries and communications concerning the Botanical Congress may be addressed to Professor O. Fenzig, of the University of Genoa.

The European horticultural papers have been lamenting the destruction of wild Daffodils in the Basses Pyrenees. Mr. C. Wolley Dod, writing to the *Journal of Horticulture*, states that among indigenous kinds Narcissus Bulbocodium, var. citrinus, extends over so much territory that, in spite of orders for hundreds of thousands of bulbs, it is in no danger of extermination. The variety Pallidus præcox, of N. Pseudo-narcissus, has been severely taxed by eradicating collectors for the English market, but for all this it is still abundant in the woods and multiplies so rapidly from seed that it only needs a few years of peace to be as abundant as ever. Besides this it is being largely cultivated, and as the people find how easy it is to raise the bulbs from seed they will hardly go to the trouble of collecting wild ones from less populous parts of the Basque country.

The Clark Memorial Medal has recently been awarded by the Royal Society of New South Wales to Mr. W. T. Thiselton-Dyer, Director of the Royal Gardens at Kew, for services rendered to the colonies in India through his admirable organization and administration of the Royal Gardens, which have resulted in a system of cohesion and co-operation between that establishment and the botanical gardens of the British Empire. This is the third time the Clark Memorial Medal has been awarded to an official connected with the Royal Gardens, it having been previously bestowed on Sir Joseph Hooker for his work in elucidating the Flora of Australia, and later upon Mr. Bentham for his classical Australian Flora. Those persons who are familiar with Mr. Dyer's remarkable executive capacity and with the state of proficiency to which he has raised the establishment under his charge will hardly agree in his own underestimate of his services as set forth in his letter of acknowledgment, or feel with him that his work has only been the humble one of continuing the traditions which have made Kew as much an imperial as a local institution.

Experiments for protecting the fruit-buds of Peach-trees from injury by cold during the winter have been made for several years at the Massachusetts Agricultural College, and for four years past in the early winter the roots of several of the trees have been loosened on the north and south sides and the trees laid over on the ground. In this way, if the roots are cut off during early summer, the growth will be forced into the roots on the east and west sides, and these will be simply twisted a little in the process of bending over. The trees are bent toward the south to avoid the direct rays of the sun on the trunk and main branches. In the first experiment the buds were injured by heat because the trees were covered too closely; after that they were covered with mats and other light material, and a large percentage of the buds were saved. This spring, while about fifty-two per cent. of the fruit-buds were destroyed on unprotected trees, those which were protected show only ten per cent. destroyed. Many of the trees treated in this way are more than ten years old, and they are easily set up in the spring, grow well and mature a crop. No covering should be put on the ground under the tree, as the moisture seems necessary to keep the buds in good condition, and if the land is in sod the trees should be sprayed with the Bordeaux mixture and with skim-milk and Paris green to protect them from field-mice, which are very fond of them.

In the report of the Botanical Gardens of British Guiana it is said that there is as much difference between a good variety of mango and a bad one as there is between the choicest cultivated apple and the bitterest wild crab. No cultivated fruit rivals the better kinds of mango, while none is probably quite as low as the poorer kinds. By good kinds is meant those without fibre, which are true table fruits, with firm rich flesh, which can be easily cut from the seed. The inferior kinds have stringy flesh, which clings to the seed, and an unpleasant taste like that of turpentine. The range of color in mangos is as wide as the range of quality, some having a combination of tints more beautiful than those of the finest peaches and plums. Others are a beautiful golden yellow, and others still a dull soiled green. The color, however, is no indication of quality, as some of the worst of the stringy mangos are the most gorgeous in color. The mango is a native of India, from whence it has spread quite around the equatorial belt, although it did not reach the West Indies until the second half of the last century. Inferior kinds prevail there, however, because there has been small attempt to import the good ones, and the inferior kinds possess a greater constitutional vigor. Besides this, the peasantry, who are the chief consumers of the fruit, have no preference for the best kinds. The few good varieties which are known in British Guiana are now being propagated by grafting, but they are not at all abundant; indeed, no first-class mango has ever yet appeared in the fruit-stalls of the Georgetown market, nor have the great majority of the inhabitants of the land ever tasted one. There seems to be no reason why, with a proper selection of kinds, the mango should not be included among the ordinary cultivated glass-house fruits of temperate countries. No peaches, apricots, grapes or pineapples in the world rival those grown in glass-houses, and if skill were attained in their cultivation by practice it is probable that finer examples of the fruit of the Mango would be found in English glass-houses than in the tropics. The choicest kinds of Mango-trees might be grown in the great glass buildings at Kew, but there are many dwarf kinds which might be grafted and easily kept to a height of eight or ten feet, and the same diameter of branches.